

CLAIMS

1. An on-die device comprising:
 - a control unit to provide differential reference signals; and
 - a first detector unit to receive said differential reference signals and to provide a first signal indicative of a differential voltage fluctuation at a first component.
2. The device of claim 1, wherein said control unit comprises a voltage generator to receive a first reference voltage signal and a second reference signal from a source external to said die, said voltage generator to provide a control voltage reference signal.
3. The device of claim 2, wherein said control unit further comprises a programmable voltage-to-current converter to receive said control voltage reference signal and to provide said differential reference signals based at least on said control voltage reference signal.
4. The device of claim 3, wherein said programmable voltage-to-current converter adjusts said differential reference signals determining a threshold value of said differential voltage fluctuation.
5. The device of claim 3, wherein said control unit includes logic to apply digital filtering to fluctuation indicator signals from said detector unit.
6. The device of claim 1, wherein said control unit comprises a voltage generator to receive a first reference voltage signal and a second reference signal from a source internal to said die, said voltage generator to provide a control voltage reference signal.

7. The device of claim 1, wherein said control unit comprises a digital interface to input user inputs and to output signals from said die.

8. The device of claim 1, wherein said differential reference signals comprise differential current signals.

9. The device of claim 1, wherein said first detector unit receives a monitored first signal from said first component on said die and receives a monitored second signal from said first component on said die.

10. The device of claim 9, wherein said first detector unit includes a differential droop sensing mechanism to compare a magnitude of differential fluctuations between said monitored first signal and said monitored second signal with a reference value based on said differential reference signals.

11. The device of claim 10, wherein said differential droop sensing mechanism comprises a comparator to output said first signal indicative of said differential voltage fluctuation based on said comparison.

12. The device of claim 1, further comprising a second detector unit to receive said differential reference signals and to provide a second signal indicative of a differential voltage fluctuation at a second component.

13. An on-die device to determine voltage fluctuations, said device to compare differential reference signals and monitored voltage signals at a first area of said die.

14. The device of claim 13, wherein said device comprises:
a control unit to provide said differential reference signals; and
a first detector unit to receive said differential reference signals and to provide a first signal
indicative of a differential voltage fluctuation at said first area.

15. The device of claim 14, wherein said control unit comprises a voltage generator to
receive a first reference voltage signal and a second reference signal from a source external to said
die, said voltage generator to provide a control voltage reference signal.

16. The device of claim 15, wherein said control unit further comprises a programmable
voltage-to-current converter to receive said control voltage reference signal and to provide said
differential reference signals based at least on said control voltage reference signal.

17. The device of claim 16, wherein said programmable voltage-to-current converter
adjusts said differential reference signals determining a threshold value of said differential voltage
fluctuation.

18. The device of claim 14, wherein said control unit comprises a voltage generator to
receive a first reference voltage signal and a second reference signal from a source internal to said die,
said voltage generator to provide a control voltage reference signal.

19. The device of claim 14, wherein said differential reference signals comprise differential current signals.

20. The device of claim 14, wherein said device further comprises a second detector unit to receive said differential reference signals and to provide a second signal indicative of a differential voltage fluctuation at a second area of said die.

21. A device to monitor voltage fluctuations, said device comprising:
a control unit to generate reference signals;
a first detector unit to receive said reference signals and to receive first voltage signals from a first device under test, said first detector unit to provide a first signal indicative of voltage fluctuation based on said reference signals and said first voltage signals; and
a second detector unit to receive said reference signals and to receive second voltage signals from a second device under test, said second detector unit to provide a second signal indicative of voltage fluctuation based on said reference signals and said second voltage signals.

22. The device of claim 21, wherein said device is provided on-die.

23. The device of claim 22, wherein said control unit comprises a voltage generator and a programmable voltage-to-current converter, said voltage generator to receive a first reference voltage signal and a second reference signal from at least a source external to said die, said voltage generator to produce a control voltage reference signal, said programmable voltage-to-current converter to receive said control voltage reference signal and to provide said reference signals.

24. The device of claim 23, wherein said programmable voltage-to-current converter adjusts said reference signals based on a threshold value of voltage fluctuation.

25. The device of claim 24, wherein said reference signals comprise differential current signals.

26. The device of claim 22, wherein said control unit comprises a voltage generator and a programmable voltage-to-current converter, said voltage generator to receive a first reference voltage signal and a second reference signal from at least a source internal to said die, said voltage generator to produce a control voltage reference signal, said programmable voltage-to-current converter to receive said control voltage reference signal and to provide said reference signals.

27. A silicon die comprising:
a first component;
a second component; and
a device to determine voltage fluctuations at said first component and at said second component.

28. The die of claim 27, wherein said device comprises:
a control unit to generate reference signals;
a first detector unit to receive said reference signals and to receive first voltage signals from said first component, said first detector unit to provide a first signal indicative of voltage fluctuation

based on said reference signals and said first voltage signals; and

a second detector unit to receive said reference signals and to receive second voltage signals from said second component, said second detector unit to provide a second signal indicative of voltage fluctuation based on said reference signals and said second voltage signals.

29. The die of claim 27, wherein said reference signals comprise differential current signals.

30. A method comprising:

providing differential reference signals on a die; and

providing a first signal indicative of a differential voltage fluctuation at a first component on said die.

31. The method of claim 30, wherein said first signal is based at least on said differential reference signals.

32. The method of claim 30, further comprising receiving a monitored first signal from said component and receiving a monitored second signal from said first component.

33. The method of claim 32, wherein providing said signal comprises comparing a magnitude of differential fluctuations between said monitored first signal and said monitored second signal with a reference value based on a magnitude of said differential reference signals.

34. The method of claim 30, wherein said differential reference signals comprise

differential current signals.

35. The method of claim 30, further comprising receiving a first reference signal and a second reference signal from a source external to said die.

36. The method of claim 35, further comprising providing a control voltage reference signal based on said first reference signal and said second reference signal, said differential reference signals being based at least on said control voltage reference signal.

37. The method of claim 36, further comprising adjusting said differential reference signals based on a threshold value.

38. The method of claim 30, further comprising receiving a first reference signal and a second reference signal from a source internal to said die.

39. The method of claim 30, further comprising providing a second signal indicative of a differential voltage fluctuation at a second component on said die, wherein said second signal is based at least on said differential reference signals.